

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-63 and 72-82 are presently active; Claims 64-82 having been previously canceled without prejudice in the present amendment, Claims 1, 8, 14, 15, 18-22, 35-37, 40, 42, 44, 45, 50 and 57-63 having been amended by the present amendment. No new matter has been added.

In the outstanding Office Action, the specification was objected due to informalities. Figures 1A, 1B, 1C, and 2A- 2D were objected to for not having a legend such as "Prior Art" and Figures 3A and 3B were objected to. Claims 1, 3-20, 22, and 24-63 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Verentchikov et al (U.S. Pat. No. 6,534,764). Claims 2 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Verentchikov et al in view of Vestal (U.S. Pat. No. 6,348,688). Claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Verentchikov et al in view of Weinberger et al (U.S. Pat. Publ. No. 2002/20182649 A1).

Firstly, Applicants acknowledge with appreciation the courtesy of Supervisory Patent Examiner Lee to conduct an interview in this case on February 17, 2004. During the interview, the issues identified in the outstanding Office Action were discussed. Specifically, the objections to the specification and drawings regarding Figures 3A and 3B were indicated on the Interview Summary Sheet as being withdrawn. Further, language differentiating the invention depicted in Applicants' Figures 3 and 4 (specifically with regard to the reflecting electrode 318 and the acceleration grids 420) was discussed, but no agreement on patentability was reached.

Accordingly, regarding the objection to the specification, the specification has been amended to clarify the nature of the "computer program product" recited in the Field of

Invention section. Thus, it is respectfully submitted that the remaining objection to the specification has been overcome.

Regarding the objection to the drawings, on the replacement sheets, Figures 1A, 1B, 1C, and 2A-2D have been labeled with - Prior Art-. Thus, it is respectfully submitted that the remaining objection to the drawings has been overcome.

Claims 1, 22, and 50 have been amended to clarify that, in the claimed inventions, the extracted ions are directed along a curved trajectory into a time of flight mass analyzer when the time-of-flight mass analyzer is selected, and are directed to an ion trap mass analyzer when the ion trap mass analyzer is selected.

As seen in Applicant's Figure 3A, the reflecting electrode 318 is configured such that extracted ions (upon for example the application of a positive voltage) are reflected along the curved trajectory depicted to the ion detector 320. As seen in Applicant's Figure 3B, the reflecting electrode 318 is configured such that extracted ions (upon grounding the reflecting electrode 318) are directed into the ion trap mass analyzer 306. As seen in Applicant's Figure 4, the acceleration grid 420 is configured such that extracted ions (upon for example the application of a periodic voltage) are deflected from the axis of the rf quadrupole 412 to TOF mass analyzer 416, and thus along a curved trajectory. Without application of voltage to the acceleration grid 420, the extracted ions are directed through the acceleration grid 420 into the ion trap mass analyzer 424. Thus, the claimed ion guiding elements (e.g., the reflecting electrode 318 and the acceleration grid 420) are configured to both direct the extracted ions along a curved trajectory to the time-of-flight mass analyzer and direct the ions to the ion trap mass analyzer.

Verentchikov et al disclose in tandem a linear time-of-flight mass spectrometer 23, a collision induced dissociation CID cell 26, and time of flight mass spectrometer section 27. As shown in Figure 2 of Verentchikov et al, deflection elements 36, 37, and 38 in the linear

time-of-flight mass spectrometer 23 defocuses the ions such that ions travel off-axis along the linear path 40b depicted in Figure 2 of Verentchikov et al to the annular detector 39 for time of flight analysis or focuses the ions on-axis along the curved path 40a depicted in Figure 2 of Verentchikov et al to the CID cell 26.¹ Steering elements 36, 37, and 38 in the linear time-of-flight mass spectrometer 23 of Verentchikov et al, while configured to direct the extracted ions through the linear time-of-flight mass spectrometer 23 into the CID cell 26, are not configured to direct the extracted ions along a curved trajectory to the annular detector 39. Indeed, the only teachings in Verentchikov et al for deflection along a curved path involve the curved path 40a and the deflection of ions in the orthogonal pulser 55. As discussed, the curved path 40a focuses ions in the linear time-of-flight spectrometer 27 to the CID cell, and does not direct the ions along a curved path to the time-of-flight mass analyzer, as defined in the independent claims. The orthogonal pulser 55, while configured to direct the ions most likely along a curved trajectory into the time of flight mass spectrometer section 27, is not also configured to direct the ions to an ion trap mass analyzer, as defined in the independent claims.

M.P.E.P. § 2143 requires for a *prima facie* case of obviousness that the prior art reference (or references when combined) must teach or suggest all the claim limitations. With no disclosure in Verentchikov et al for the claimed ion guiding optical element which permits both directing extracted ions along a curved trajectory into the time of flight mass analyzer when the time-of-flight mass analyzer is selected and directing extracted ions to the ion trap mass analyzer when the ion trap mass analyzer is selected, it is respectfully submitted that

¹ Verentchikov et al, col. 11, lines 41-49.

independent Claims 1, 22, and 50 and the claims dependent therefrom patentably define over the applied prior art.²

New independent Claim 82 defines a mass spectrometer in which the ion guiding element disposed in front of both the TOF mass analyzer and the IT mass analyzer. This configuration is shown by way of example in Applicant's Figure 4. The ion guiding element is accordingly configured to guide a first extraction of the ions into the TOF mass analyzer in the normal mass spectrometer mode of operation, and configured to guide a second extraction of the ions into the IT mass analyzer in the tandem mass spectrometer mode of operation. Verentchikov et al disclose ion guiding elements (i.e. steering elements 36, 37, and 38) disposed in the linear time-of-flight mass spectrometer 23 and not disposed in front of the mass spectrometer 23. Accordingly, Claim 82 patentably defines over the applied prior art.

Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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² Support for new dependent Claims 72-81 is found for Claims 72-74 in Applicant's Figure 3A, for Claims 75-77 in Applicant's Figure 3A and original Claim 9, and for Claims 78-81 in numbered paragraph [0031] of the specification.